

CLAIMS

WHAT IS CLAIMED IS:

- 1 1. An antimicrobial formulation comprising:
- 2 (a) a zinc oxide from between about 2 to 90 percent by weight:
- 3 (b) a silver compound, from between about 0.05 to 2 percent by
- 4 weight, wherein the silver compound is selected from the group
- 5 consisting of silver chloride, silver phosphate and silver nitrate;
- 6 (c) a copper compound from between about 0.05 to 10 percent by
- 7 weight, wherein the copper compound is selected from the group
- 8 consisting of cupric oxide, cuprous oxide, cuprous iodide, cupric
- 9 iodide, cupric phosphate, copper (II) hydrogen phosphate, and cupric
- 10 silicate; and
- 11 (d) a bismuth compound from between about 2 to 50 percent by
- 12 weight, wherein the bismuth compound is selected from the group
- 13 consisting of bismuth subcarbonate and bismuth subnitrate.
- 1 2. The antimicrobial of claim 1, further comprising an iron compound from
- 2 between 0.05 to 3 percent by weight, wherein the iron compound is ferric oxide.
- 1 3. The antimicrobial formulation of claim 1, further comprising one or more
- 2 compounds selected from the group consisting of silica, magnesium oxide, titanium
- 3 oxide, partially hydrogenated rosin, barium sulfate and sodium borate.

- 1 4. An antimicrobial blend comprising:
- 2 (a) a antimicrobial formulation (A) of claim 1; and
- 3 (b) a medium comprising a compound selected from the group
- 4 consisting of phosphoric acid and water.
- 1 5. A method of treating microorganisms on a tooth comprising the step of
- 2 administering to a patient in need thereof an effective amount of the antimicrobial
- 3 formulation of claim 1 alone or in combination with a dental varnish, stannous
- 4 fluoride, or sodium fluoride.
- 1 6. A method of treating a skin irritation comprising the step of administering to a
- 2 patient in need thereof an effective amount of the antimicrobial formulation of claim 1
- 3 alone or in combination with a petroleum jelly, a dental varnish, stannous fluoride, or
- 4 sodium fluoride, with the proviso that said varnish does not contain chloroform.
- 1 7. A method of treating fungal infection comprising the step of administering to a
- 2 patient in need thereof an effective amount of the antimicrobial formulation of claim 1
- 3 alone or in combination with a dental varnish, stannous fluoride, or sodium fluoride,
- 4 with the proviso that said varnish does not contain chloroform.
- 1 8. A method of treating White Line Disease comprising the step of administering
- 2 to a patient in need thereof an effective amount of the antimicrobial formulation of
- 3 claim 1 alone or in combination with a dental varnish with the proviso that said dental
- 4 varnish does not contain chloroform.

1 9. A method of preventing tooth decay comprising the step of administering to a
2 patient in need thereof an effective amount of the antimicrobial formulation of claim 1
3 alone or in combination with a dental varnish, stannous fluoride, or sodium fluoride.

1 10. A formulation comprising:

- 2 (a) about 4% by weight silica;
- 3 (b) about 6% by weight magnesium oxide;
- 4 (c) about 73% by weight zinc oxide;
- 5 (d) about 5% by weight bismuth subnitrate;
- 6 (e) about 3% by weight ferric oxide;
- 7 (f) about 7% by weight cupric oxide; and
- 8 (g) about 1% by weight silver chloride.

1 11. A formulation comprising:

- 2 (a) about 4% by weight silica;
- 3 (b) about 6% by weight magnesium oxide;
- 4 (c) about 81% by weight zinc oxide;
- 5 (d) about 5% by weight bismuth subnitrate;
- 6 (e) about 2% by weight cupric oxide;
- 7 (f) about 1% by weight silver chloride; and
- 8 (g) about 1% by weight titanium chloride.

1 12. A formulation comprising:

- 2 (a) about 4% by weight zinc oxide;
- 3 (b) about 25% by weight staybelite resin;
- 4 (c) about 14% by weight bismuth subcarbonate;
- 5 (d) about 11% by weight barium sulfate;
- 6 (e) about 2% by weight sodium borate;
- 7 (f) about 7% by weight cuprous oxide; and
- 8 (g) about 1% by weight silver chloride.

1 13. A kit comprising:

2 (1) an antimicrobial formulation comprising:

- 3 (a) a zinc oxide from between about 2 to 90 percent by weight;
- 4 (b) a silver compound, from between about 0.05 to 2 percent by
- 5 weight, wherein the silver compound is selected from the group
- 6 consisting of silver chloride, silver phosphate and silver nitrate;
- 7 (c) a copper compound from between about 0.05 to 10 percent by
- 8 weight, wherein the copper compound is selected from the group
- 9 consisting of cupric oxide, cuprous oxide, cuprous iodide, cupric
- 10 iodide, cupric phosphate, copper (II) hydrogen phosphate, and cupric
- 11 silicate; and
- 12 (d) a bismuth compound from between about 2 to 50 percent by
- 13 weight, wherein the bismuth compound is selected from the group
- 14 consisting of bismuth subcarbonate and bismuth subnitrate; and

15 (2) a dental varnish, stannous fluoride or sodium fluoride.